

15th of March 2022

Closing Conference H2-Share Wystrach (Weeze, Germany)

Welcome!



10.00 - 10.05h: **Rebecca Grossberg** *Interreg NWE*

Welcome & introduction



H2SHARE

Closing conference

Weeze, Germany 15 March 2022

Rebecca Grossberg

Joint Secretariat

Interreg North-West Europe



The NWE Programme 2014 - 2020

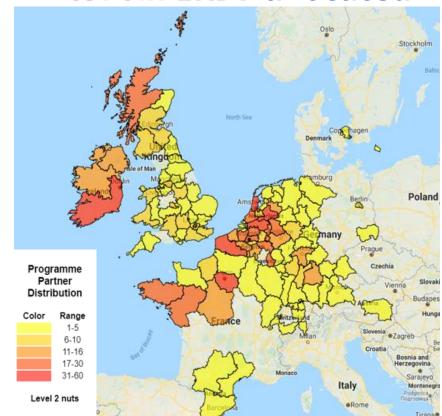


102 financed projects

1078 project partners



€376M ERDF allocated





Overview of NWE projects in the hydrogen field

4 projects implementing low carbon solutions in transportation

- H2SHIPS hydrogen fuelled water transport
- H2-SHARE- hydrogen heavyduty vehicles
- FCCP fuel cell cargo pedelecs
- HECTOR- hydrogen waste collection vehicles

2 projects facilitating uptake of low carbon technologies

- ITEG hydrogen storage from tidal energy
- GenComm smart hydrogenbased energy matrixes

Results of cooperation









€49.3 Million:

Total ERDF committed to hydrogen 2014-2020 (13% of programme budget)



Market influence through cooperation

"Joint call for the deployment of hydrogen fuel cell trucks" March 2020

•To make large-scale deployments of fuel cell trucks a reality soon, with pre-commercial series ready by 2025 (5000-10 000 vehicles) and full commercialisation by 2030 (95 000 vehicles).

•To deliver low-carbon, renewable hydrogen at a competitive cost

at the nozzle.



NWE making an impact!



Expected results by 2023



3,936Enterprises supported



133 253 TONS OF CO2

Estimated annual decrease of GHG emissions



959 Jobs created

Interreg North-West Europe 2021-2027



The new programme will focus on "promoting a green, smart and just transition for all NWE territories with the aim to support a balanced development and make all regions more resilient".

The NWE Programme 2021-2027



7 countries

Transnational cooperation:

Projects need at least 3 countries, of which 2 are from the NWE area

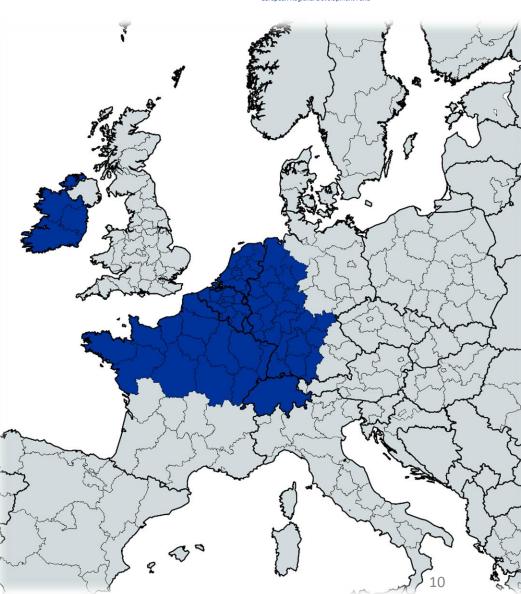
Overall budget:

€703 million

EU contribution:

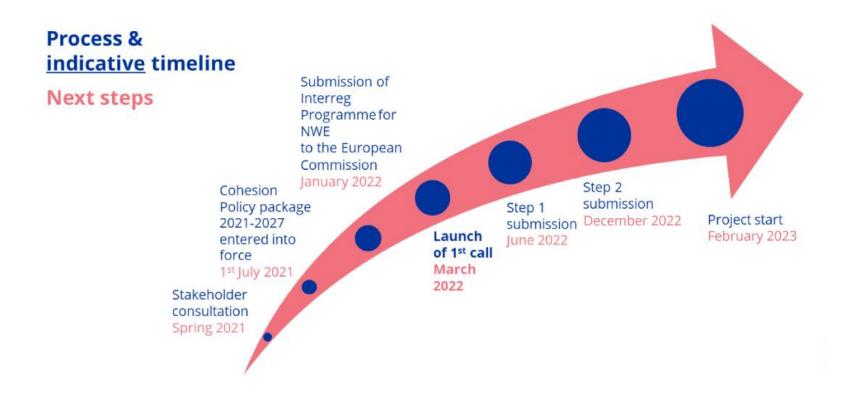
€400 million (60%)

(40% co-funding required at project level.)



The NWE Programme 2021-2027





Thematic focus

2021-2027



Priority 1 **Climate and Environment** SO 2.7 Enhancing nature protection, biodiversity and reducing all forms of pollution SO 2.4 Promoting climate change adaptation and disaster risk prevention resilience

Energy Transition SO 2.1 Promoting energy efficiency and reducing greenhouse gas emissions SO 2.2 Promoting renewable energy



Thematic focus

2021-2027







Factsheets

Available here for every SO: https://www.nweurope.eu/future-nwe-

programme/call-1-support-documents/

Example

Objectives

Within this Specific Objective, the Programme aims .

- Develop green/blue infrastructure to ensure ecosystems and prevent the loss of biodiversity
- Embed in strategic ecosystem-based approach corridors, biodiversity, and natural capital.
- Show the benefits of sound green/blue infra: . effects e.g., heat stress.
- Reduce the incidence of human activities on air

Target groups

- Local/regional/national authorities, governr organisations, (including agencies or para-pub relating to rivers, environment, natural protecti Results biodiversity protection and green/blue infrast more resilient regions.
- Universities, public research centres, private education, training centres are highly relevan.

Activities

Projects should implement a combination of activities, such as:

- Elaboration and implementation of joint strategies and/or action plans, for example, nature management plans for measuring, maintaining, enhancing, and valorising green/blue infrastructure, ecosystem services, biodiversity (e.g., invasive species); or adaptation and mitigation measures at local or regional level with the aim to reduce heat stress and air pollution in the NWE area.
- Pilot actions for testing tools and/or solutions, for example demonstration and joint implementation of scalable and replicable solutions to embed green infrastructure and ecosystem-based approach in relevant strategies and measures; or of innovative measures to reduce heat stress by enhancing and installing green and blue infrastructure for adaptation.
- Capacity building and awareness raising activities in the field of innovation for resilience, for example, training schemes related to biodiversity, promoting its management, or planning and implementation of environmental protection and nature-based solutions, green / blue infrastructure, etc.

The combination of these activities may lead to results such as:

- Key aspects of biodiversity preservation, green/blue infrastructure or heat stress and air pollution better embedded into territorial strategies and local initiatives.
- Increased knowledge and capacity of stakeholders about green/blue infrastructure and biodiversity-enhancing / nature-friendly practices.
- Innovative technologies, solutions, products, and services taken up aiming to prevent or reduce heat stress and air pollution, ensuring coherence between the proposed approaches and local/regional needs.



"Interreg NWE is funding frontrunner in

heavy duty on hydrogen !!" – Adwin Martens, January 2019







Thank you!



- Sign up for updates on our website: <u>https://www.nweurope.eu</u>
- Follow us on social media







10.05 - 10.20h: **Mathieu Wuyts**

WaterstofNet

H2-Share project



H2-Share

Hydrogen
Solutions for
Heavy-duty transport
Aimed at
Reduction of
Emissions
in North-West Europe





Mathieu Wuyts

Project manager H2-Share

Closing conference

Demonstration project



Total budget: € 3.52 M

EU funding: € 1.69 M (Interreg North West Europe)

Cofunding: Provinces of North-Brabant & Antwerp

Timeline: March 2017 – May 2022

(originally until March 2020)

Coordinator: WaterstofNet

Partners



Partners











Associated partners









Subpartners





(Co)funding



Provincie Noord-Brabant





Objectives



Programme (Interreg NWE) objective

To facilitate the implementation of transnational lowcarbon solutions in transport systems to reduce GHG emissions in NWE.

Project objective

The objective of H2-Share is to <u>facilitate the development</u> of a market for low-carbon heavy-duty vehicles on hydrogen for logistic applications and <u>gain practical</u> <u>experience</u> in different regions in NWE creating a transnational living lab and a basis for the development of a zero-emission heavy-duty vehicle industry in NWE area.

Sub objectives



1. Realise *knowledge sharing* between frontrunner regions and 'following' regions, to stimulate technology and market development in North-West Europe.



2. Deliver *proof of readiness* of the H2 technology for heavy-duty applications in real life conditions.



3. Create a roadmap and a long term cooperation with other regions for the development of heavy-duty transport on hydrogen. Roadmap and regions development changes pending



Hydrogen-electric rigid truck





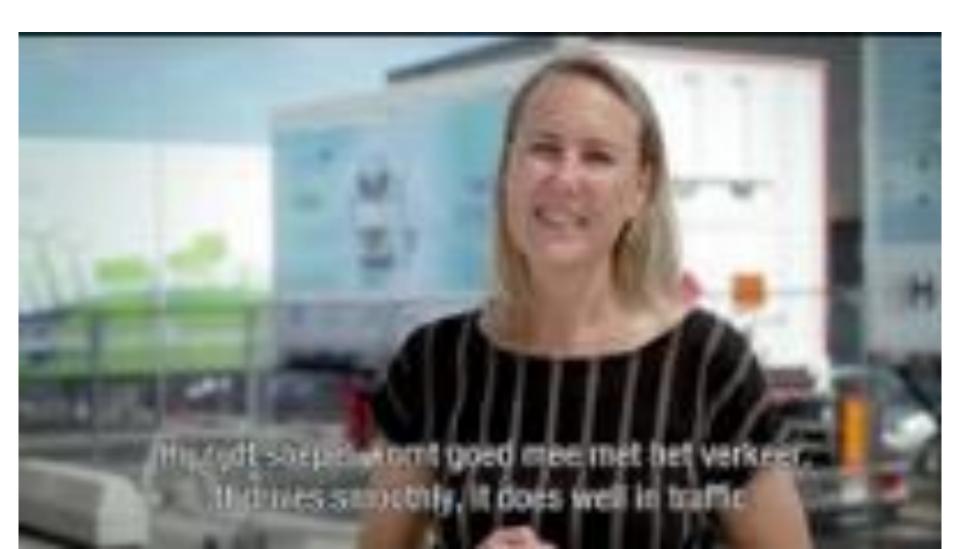
Mobile hydrogen refueling station











PRESS RELEASE FIRST DEMONSTRATION EVENT H2-SHARE

H2-Share's first hydrogen-powered rigid truck hits the road in the Netherlands

On Wednesday, 1 April, a 27-tonne hydrogen fuel cell rigid truck built by VDL started its first demonstration with BREYTNER as part of the EU-funded H2-Share project in Schelluinen, the Netherlands. Wystrach GmbH built a low-energy mobile hydrogen refueller to accompany the truck on its demonstration sites.

This hydrogen truck is unique in the Benelux. It is the first time that a truck will be demonstrated in a setting like this, certainly in combination with a mobile refuelling station. The launch of this demonstration is a giant leap forward in the development of the zero-emission heavy-duty vehicle industry in Northwest Europe and to gain practical experience with fuel cell trucks.

BREYTNER, a zero-emission transport provider, will operate the truck for three months in retail logistics, such as replenishing stores and feeder lines for zero-emission last-mile solutions. By testing the truck in different types of logistical processes, BREYTNER hopes to contribute to the question of where a hydrogen truck is best deployed. After the demonstration at BREYTNER, the truck will go to one of the other project partners for its next demonstration.

We are very excited to be one of the few companies worldwide that can demonstrate a hydrogen rigid in real-time operation. This gives our customers and us valuable knowledge on zero-emission transport solutions and will help us in taking the next steps towards more sustainable transport.' - Marie-José Baartmans, BREYTNER

The aim is to demonstrate the truck and the mobile refuelling station at 6 locations in Germany, the Netherlands, Belgium and France. To demonstrate the truck on all 6 locations, regardless of the availability of hydrogen refuelling stations, Wystrach is presenting a user-friendly and officially approved solution in the form of a mobile refuelling station with ample storage capacity, that allows flexible application possibilities. The truck can also refuel at the hydrogen stations in Rhoon/Rotterdam and Helmond during the demonstration in Schelluinen.

We realise that there is an increasing demand for a holistic view of mobility concepts. Manufacturers of trucks, trains, buses, and even forklifts are interested in hydrogen-fuelled systems. The H2Share project, therefore, is an important showcase for trendsetting possibilities.'—Wolfgang Wolter, CEO of Wystrach GmbH.

Evidence from the logistics sector shows a strong, growing interest in zero-emission solutions to reduce emissions and environmental impact on air quality. In urban areas, zero-emission logistics can be operated by battery-electric trucks. They are, however, limited in their range. For large heavy-duty vehicles which travel longer distances, electric trucks with a hydrogen fuel cell range extender are a zero-emission solution. In the EU, such vehicles are not yet commercially available but have enormous potential. '142-Share' aims to unlock this potential.

The objective of H2-Share (Hydrogen Solutions for Heavy-duty transport Aimed at Reduction of Emissions in North-West Europe) is to facilitate the development of a market for low-carbon heavy-duty vehicles on hydrogen for logistics applications and to gain practical experience in different regions in North-West Europe.

'At this moment, there are some roadblocks for widely cost-effectively deploying hydrogen-electric heavy-duty vehicles in the market. To come to a good TCO (Total Cost of Ownership) model, these need



European Regional Development Fund

to be tockled; the cost of hydrogen needs to come down significantly, the number of hydrogen refuelling stations needs to go up, and the reliability of the hydrogen fuel cell system needs to come up. Within the H2-Share project, VDL aims to prove the market readiness of the hydrogen fuel cell system in a heavy-duty vehicle and demonstrate the reliability in daily use with real users in the North-Western Europe region as a pre-cursor to the mass-market deployment of the technology. Menno Kleingeld, managing director VDLETS

The H2-Share project will deliver proof of readiness of hydrogen technology for heavy-duty applications in real-life conditions and will provide a basis for the development of zero-emission heavy-duty vehicle industry in the NWE area. The project receives 1.69-million-euro EU funding through Interreg NWE and is coordinated by WaterstofNet. WaterstofNet has been focusing on the development of hydrogen in Europe for over a decade and was responsible for the first projects with hydrogen refuse trucks and hydrogen heavy-duty trucks in Europe.

'At WaterstofNet, we foresee a major role for hydrogen in heavy-duty applications. Over four years ago, we started developing European projects with a facus on hydrogen as a heavy-duty solution with regional players, focussing on demonstrations with industrial partners and gaining practical experience. After successful demonstrations with hydrogen refuse trucks in other projects, we are very proud to be involved in the first demonstration of this rigid-truck in our region within the H2-Share project. We believe it is clear that this technology has strong prospects for the North-West-Europe region, and we are looking forward to taking the next steps.' — Adwin Martens, director of WaterstofNet

Concerning the current COVID-19 outbreak and hydrogen, Jorgo Chatzimarkakis, Secretary General of Hydrogen Europe, stated: "Currently Europe is facing an unprecedented crisis. Our economy will be greatly affected and hydrogen, as innovative technology, can plan a crucial role in supporting the post-COVID 19 recovery plan while complying with the EU Green Deal. With the deployment of the H2Share truck, we have tangible evidence that hydrogen fuel cell technology is ready today to play its part".

Partners

The H2-Share partners and associated partners are VDL, Wystrach GmbH, Rai Automotive NL, BREYTNER, Colruyt Group, Cure, DHL, e-mobil BW, Hydrogen Europe, Dutch Ministry of Infrastructure and Water Management, TNO, Waterstofhet. The city of Helmond and VIL are sub-partners in the

North-West Europe H2-Share

Pictures for free use can be found here (photo credit - Wystrach):

https://cloud.wystrach.gmbh/s/ydk2mx3x4zcNQ3x

Password: H2Share!

For more information:

Interreg NWE: https://www.nweurope.eu/projects/project-search/h2share-hydrogen-solutions-for-heavy-duty-transport/

WaterstofNet: https://www.waterstofnet.eu/en/projects-roadmaps/h2-share

VDL: https://www.vdlgroep.com/en

Wystrach: https://www.wystrach.gmbh/en/produkt-wyrefueler.html

Breytner: https://breytner.com/







Press release, February 16, 2021

ABC Logistik demonstration a success in Düsseldorf H2-Share hydrogen fuel cell truck well received

Düsseldorf - The H2-Share truck performed well in demonstration at transport company ABC Logistik in Düsseldorf from the beginning of November until the end of December 2020. The company concluded in its final evaluation that hydrogen trucks are the future of zero-emission heavy-duty logistics.

Thanks to the efforts and collaboration of ABC Logistik, VDL, the EnergieAgentur.NRW and H2 MOBILITY Deutschland, the 27 tonne truck demo was organised on short notice. It was just the second of six demonstrations within the international H2-Share project, dedicated to the development of hydrogen heavy-duty transport and refuelling technology. It transported up to 8 tonnes of general cargo (e-commerce products), mainly on motorways and in industrial zones. The truck refuelled under supervision of Air Liquide at the hydrogen refuelling station (HRS) Düsseldorf-Holthausen operated by H2 MOBILITY Deutschland.

Of course the demonstration also brought a number of points for improvement into focus for the next stage of development. Hills formed challenges at times and a more powerful electromotor may be required. The truck is also quite noisy, too much so for night deliveries. This could be improved by lowering the high compressor air intake. In general, the configuration of the H2-Share truck consists of a number of compromises given the need for multiple demonstrations at different end-users, ABC Logistik concluded that most of these challenges can be overcome and are keen to continue the tests in a following phase. This will be supported by the commitment of North Rhine-Westphalia to stimulate the deployment of fuel cell vehicles with green hydrogen in the region.

Michael te Heesen, General Manager at ABC Logistik: "As a privately-owned logistics service provider with a strong interest in sustainable logistics concepts and technologies, we were very pleased to be invited to participate in the test phase. Although the vehicle is still a prototype, its use has left many positive impressions. We are convinced that hydrogen technology will soon be ready for daily operational use. Now the supply of hydrogen and the refuelling station network need to improve while refuelling costs need to drop."





Dr. Frank Koch, Senior Expert for Fuel Cell Vehicles at the Fuel Cell and Hydrogen Network, Electromobility at EnergieAgentur.NRW: "For NRW, the reduction of emissions in the transport sector is a key success factor in reaching our climate targets. Heavy-duty vehicles are main contributors of greenhouse gases. Thus, it is good to see that truck manufacturers are developing emission free vehicles. In cooperation with big transport associations, we are planning a larger roll-out of FC trucks. Therefore, we are eagerly looking for FC trucks and look forward to testing them with logistic companies in our Bundesland."

Rebecca Grossberg, project officer Interreg NWE: "This pilot has provided solid evidence on the potential of hydrogen for hydrogen trucks in Nord Rhein-Westfalia. H2-Share is testing the existing infrastructure which will help stimulate the development of hydrogen vehicles. The h2 applications such as the trucks are key enablers of hydrogen technologies and play a crucial role in Europe's energy transition."

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Pictures via this WeTransfer link The H2-Share truck refuelling at the HRS Düsseldorf-Holthausen operated by H2 MOBILITY Deutschland (demonstration at ABC Logistik in Düsseldorf)

More info and contact

www.nweurope.eu/h2share

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The mobile hydrogen station, the WyRefueler from Wystrach GmbH, has been deployed at Geldhauser near Munich, one of the largest private bus companies of Bavaria.

The 'WyRefueler' mobile hydrogen refueling station ensures a reliable supply of hydrogen to the 350 bar test vehicles. CEO Wolfgang Wolter said: "We were able to set our system up on-site in Hofolding in under a day. All the customer needed was a 63 A power connection." Designed to supply 350 bar vehicles, the refueling station can also fill 700 bar vehicles up to a target pressure of 400 bar.

"As a bus company, we are keen to test the suitability of hydrogen technology under everyday conditions," says Martin Geldhauser, CEO of the Geldhauser Group and host of the HyBayern Hydrogen Days. Starting at the Geldhauser premises, the different bus models completed test drives on three different test routes. Geldhauser says: "It's important for us to compare fuel economy, handling, comfort, and day-to-day running before we decide which model to purchase."

"The refueling process was always fast and reliable, whatever the vehicle to be refueled. It's clear that emissions-free bus travel is not some vision of the future, but already a reality. The hydrogen technology used here is absolutely practical," Geldhauser reported.



ropean Regional Development Fund



Press release





DHL Express is piloting the first hydrogen truck throughout Deutsche Post DHL Group

- · Apple is the first customer to test the new logistics solution
- The truck is part of a European testing program operating in the Benelux region
- · The pilot is part of the de-carbonization strategy of Deutsche Post DHL Group

Bonn/Breda, November 23, 2021: DHL Express, the world's leading international express service provider, is the first within Deutsche Post DHL Group to test hydrogen-fueled trucks for the long haul. Together with its customer Apple, DHL pilots the vehicle in the Benelux region, as part of the Interreg NW Europe program H2-Share, coordinated by WaterstofNet. The program's goal is to facilitate the development of low-carbon heavy-duty vehicles on hydrogen for logistic applications and gain practical experience in different regions. It creates a transnational living lab and basis for the development of the zero-emission heavy-duty vehicle industry.

"In a globalized world, sustainable and clean fuels are essential for climate-neutral logistics. Not only for sea and air freight but also line-haul road freight, as these help reduce CO₂ emissions," says Alberto Nobis, CEO DHL Express Europe. "That's why we engage not only in the electrification of our fleet but also invest in the development of alternative drive systems for very long ranges. The project shows that we can achieve truly emission-free logistics in Europe if we join forces and build on experience."

While battery-electric trucks can operate efficiently within last-mile delivery, fuels from renewable energies such as hydrogen are essential for zero-emission line-haul. Due to their vast potential, DHL Express is now testing a heavy-duty vehicle, with a fuel cell range extender from VDL. The truck, operated by Dutch Nassau Sneltransport, covers a daily distance of around 200 km, running a cross-border route in the Benelux region. The truck refuels on a daily basis at a mobile fuel station from Wystrach as part of the project. It transports deliveries of DHL Express' customer Apple. During the piloting phase, up to 35 tons of CO₂ can be saved with the new technology.



Press release





In line with its Sustainability Roadmap, Deutsche Post DHL Group is heavily investing in the use of alternative fuels. Hydrogen is opening up a new market and can contribute to green transport solutions. Insights from the project help evaluate the potential of this fuel alternative and support decision-making processes.

– End –

Note to editors:

Please find more information about the H2-Share project at <u>H2Share</u>: <u>Hydrogen Solutions for Heavy-</u> duty transport I Interreg NWE (nyeurope.eu).

Media Contact:

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On the Internet: <u>dpdhl.com/press</u> Follow us at: <u>twitter.com/DeutschePostDHL</u>

DHL - The logistics company for the world

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dhl.com







Hydrogen heavy-duty projects joining forces

September 17, 2021 1:27 PM

Interreg North-West Europe projects H2-Share and HECTOR recently joined forces with the FCH-JU project REVIVE. Last week the mobile hydrogen refuelling station of H2-Share (the 'WyRefueler') refuelled two zero-emission garbage trucks simultaneously in Breda. It is a first that three different heavy-duty, hydrogen projects join forces and reinforce each other.

The mobile HRS 'WyRefueler' (built by Wystrach) refuelled a Faun garbage truck of 'Wirtschaftsbetriebe Duisburg' and an E-Trucks Europe garbage truck. The Faun truck is currently operating in the HECTOR project collecting public waste in the Duisburg area. Faun and the Wirtschaftsbetriebe want to test the range of the vehicle and the refuelling experience at mobile refueler.

The E-trucks Europe garbage truck of the Municipality of Breda is operating under project REVIVE, funded by the FCH-JU. This vehicle is the first of two vehicles to operate in daily waste collection. The drivers operating the trucks, exchanged experiences and checked out each others vehicles. In daily operations they prefer the comfort and low noise, combined with no tailpipe emissions above a diesel truck.

The WyRefueler, capable of refuelling several heavy-duty applications on a daily basis, is part of the H2-Share project. In locations where no infrastructure is available (yet) the WyRefueler can provide the hydrogen needed. The 27 ton H2-Share truck (built by VDL) was also refuelled that same afternoon in Breda.

WaterstofNet facilitated the installation of the HRS and organised the permit for the mobile hydrogen refuelling station. Later this year TotalEnergies will open a hydrogen refuelling station in Breda, which is part of the WaterstofRegio 2.0 project, also coordinated by WaterstofNet. The multi-fuel station is expected to open in November at the Minervum site.

More info about the other projects REVIVE* and HECTOR or the coordination of WaterstofNet.





Demonstrations









Colruyt Group tests 27 tonne hydrogen truck in Belgium and France

Halle, 9 November 2021 - In the past few months, Colruyt Group has been testing a 27-tonne "range extender" electric truck with hydrogen in Belgium, after it having tested a 44-tonne hydrogen truck earlier this year. The group will now also test this 27-tonne truck for a month in France. This truck was developed by the VDL Groep in Eindhoven, and the test is part of the European Interreg North-West Europe H2-share demonstration project. While driving the truck, its batteries recharge with the electricity generated by the hydrogen fuel cell. In addition to being sustainable because of the use of green energy and hydrogen, this vehicle has the added benefit of being able to travel longer distances than other electric trucks - an important asset for freight transport. Colruyt Group believes that hydrogen can play an important role in making mobility and energy supplies more sustainable. That is why the group has been investing in this green energy carrier for years, and hopes that other companies will follow.

After Belgium also test with 27-tonne hydrogen truck in France

As a dedicated end user Colruyt Group is testing the hydrogen truck in its daily logistics operations in Belgium and France. Because of the diversity of the group, it is possible to test a variety of user cases. That way Colruyt Group fully lives up to its role as a pioneer in the concrete application of green energy. The truck is also quieter than others are, which also supports Colruyt Group's ambition to make more silent deliveries.

Colruyt Group and VDL Groep are active partners in the European demonstration project H2-Share (H2-Share stands for "Hydrogen Solutions for Heavy-duty Transport Aimed at Reduction of Emissions in North-West Europe"), which aims to build knowledge and experience with large-scale hydrogen applications in logistics. The truck is being tested by the various partners at 6 locations in Belgium, the Netherlands, Germany and France. By sharing the gained experience broadly, H2-Share wants to develop a roadmap for the application of hydrogen in heavy-duty transport. The project is partly made possible thanks to the financial support of the European Union within the framework of the Interreg North-West Europa programme.

Not a first: Colruyt Group leads the way in hydrogen

Since 2004, Colruyt has already invested 6 million euro in innovative projects with hydrogen. The group has been producing its own green hydrogen on the Dassenveld site for a few years now. In the distribution centre, a number of forklift trucks is hydrogen-powered. In addition, hydrogen is being used for 20 passenger cars, which are deployed within the group. In October 2018, the group opened the first











green public hydrogen filling station: the DATS 24 station in the Zinkstraat in Halle thus became the first fully integrated station in Belgium with a range of all possible fuels.

In 2020, Colruyt Group was the first in Europe to test a 44-tonne hydrogen truck. This is also a fully electric truck with hydrogen "range extender". This test was part of the European demonstration project Hydrogen Region 2.0, Interreg Flanders-Netherlands.



This project is financed within the European cooperation programme Interreg North-West Europe.

More information:www.nweurope.eu

About Colruyt Grou

Colruyt Group operates in the food and non-food distribution sector in Belgium, France and Luxembourg, with more than 600 own stores and over 580 affiliated stores. In Belgium, this includes Colruyt, OKay, Bio-Planet, Cru, Dreamland, Dreambaby, Bike Republic and the affiliated Spar stores. In France, in addition to the Colruyt stores, there are also affiliated Coccinelle, Coccimarket and Panier Sympa stores. The group is majority shareholder of The Fashion Society, which includes the fashion retail chains ZER, pointCaref, the Fashion Store and ZEB For Stars. JIMS runs fitness clubs in Belgium and Luxembourg. Solucious and Culinoa deliver food service and retail products to professional customers in Belgium (hospitals, SMEs, hospitality sector, etc.). The other activities comprise the energy supply by DATS 24 in Belgium (fuels, natural gas and green energy), printing and document management solutions (Symeta Hybrid) and the production of green energy (Eoly). The group employs over 32.000 co-workers and recorded a EUR 9.9 billion revenue in 2020/21. Colruyt is listed on Euronext Brussels (COLR) under ISIN-no.

About WaterstofNet

WaterstofNet is a knowledge and cooperation platform that contributes to a carbon-neutral society by supporting and realising hydrogen projects in Flanders and the Netherlands. Along with the industry and the authorities, we provide concrete realisations in the field and lay the foundations for further cooperation. That way we can help Flanders and the Netherlands to develop as a leading hydrogen region. More info www.waterstofmet.eu

About VDL Groep

Strength through cooperation. That is the basis of VDL Groep, the international industrial family business with headquarters in Eindhoven. This company was founded in 1953 by Pieter van der Leeglet. At first VDL Groep was a specialist in metal working. When his son Wim van der Leeglet book over the company in 1966, it specialised in high-tech supplies for the semiconductor industry, among others, and expanded its portfolio to include plastics processing and the development, production and sale of buses. VDL Groep is active in subcontracting and semi-finished products, produces its own finished products such as suspension systems, automated car factory equipment, heat exchangers and container handling systems, and with VDL Nedcar in Born disposes of the only passenger car plant in the Netherlands in which serial assembly is carried out for third parties.

Learning experiences



Truck

- Different end-users > design not 100% fit for purpose
- Long certification proces
- Range extender testing behind bus was good decision
- Highway driving & FC capacity
- Service
- Start-up
- Sound of cooling
- Hills with fully loaded truck not easy

Learning experiences



Mobile refueler

- First month used station in Rhoon & Helmond
- Delayed due to Corona
- 2 weeks succesfull operations in full automatic mode
- Very quick permit proces in NL, special procedure
- Mobile solution is ideal to generate experiences and develop local/regional markets (trucks, buses, trains etc)

Learning experiences



Other

- Driver choice
- List with contact persons
- Type III & IV tanks refueling Germany

Interreg Luropean UNION North-West Europe H2-Share

European Regional Development Fund

Thank you



European Regional Development Fund

10.20 - 10.50h: **Hans Bekkers** *VDL*

H2-Share 27-ton truck



Dion Verhulst – VDL Enabling Transport Solutions by Hans Bekkers – VDL Special Vehicles by 15-03-2022



TARGETS FOR VDL IN THE H2SHARE PROJECT

VDL targeted 4 major H2 topics within the H2Share project namely:

- Fuel Cell Costs
- Reliability of the Fuel Cell technology
- H2 Fuel Costs
- ➤ H2 Availability/Infrastructure



SPECIFICATIONS

GVW 27 ton

Power 210 kW

Torque 2.000 Nm

Battery 82 kWh

Fuel Cell 67 kW

Capacity 30 kg H2

Range 300 km

TRL7 Readiness

















LESSONS LEARNED

- Power balance tuning was initially too low. Long highway drives could drain the battery.
- Service maintenance
 - Fuel Cell maintenance carried out with VDL and Ballard.
 - Coolant contamination detected, insulation faults.
 - Data connection with Ballard, helpful in case of faults analysis.
- Cooling noise must be reduced.
- Big heat rejection

- The operator of the HRS needs to understand the minimum tank pressure set point in order to refuel.
- Proper driver training is a necessity, as is the availability of a technical helpdesk in case of issues.
- Start-up procedure of the system is too long (~15min), this must be reduced.
- Better communication regarding remaining range is necessary (combination battery/H2).
- Physical dimensioning of the Range extender is large and it therefore influences the driver's line of sight.



CARRY-OVER

- Vehicle will be rebuild, with new Fuel Cell Modules
- Base E-Truck Rigid FAN will be the same.
- Data logging will be adapted to H2Haul standards.
- Test for Infrared Communication on truck, will help optimal and fast filling, within set boundaries.



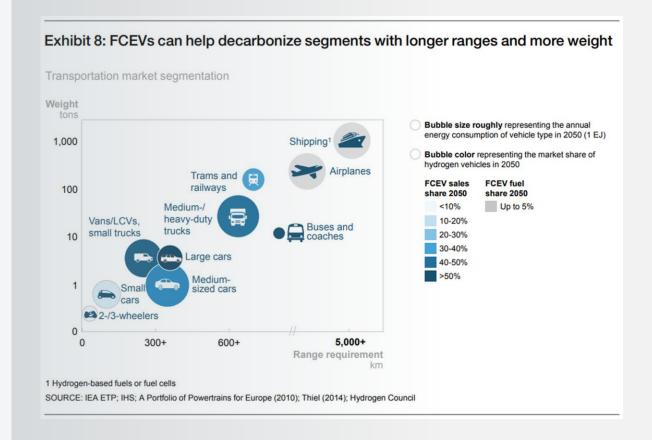






FUTURE PERSPECTIVE

- The Zero-Emission mix of the future will contain hydrogen as one of it's solutions
- VDL works with a modular strategy of which one of the modules will be a hydrogen solution
- Focus on long-haul, heavy duty & off-road applications





THANK YOU VERY MUCH FOR YOUR ATTENTION!

DION VERHULST – PROJECT MANAGER – VDL ENABLING TRANSPORT SOLUTIONS – <u>D. VERHULS@VDLETS.NL</u> HANS BEKKERS – COMMERCIAL DIRECTOR – VDL SPECIAL VEHICLES – <u>H.BEKKERS@VDLSPECIALVEHICLES.COM</u>





10.50 - 11.20h:

Dirk Paessens

Wystrach

WyRefueller



Wystrach hydrogen systems

H2Share mobile refueller





Agenda

Company profile

• WyBundle bundles for industrial gases

• WyStorage storage solutions

• WyCarrier transport solutions

• WyTankSystems tank systems

• WyRefueler hydrogen refueling stations

• WyService maintenance and service for hydrogen products





Company profile



- Located in Weeze, Germany (greater Düsseldorf area)
- Approximately 200 employees
- Over 30 years' experience with high-pressure systems
- EUR 38 million revenue in 2021
- Certified to DIN EN ISO 9001:2015
- Production largely on-site in Weeze
- In-house development department





Wystrach – a part of Hexagon Purus

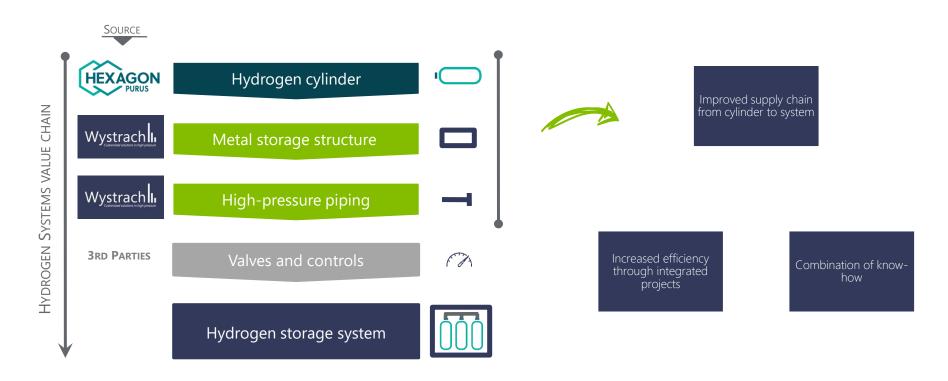


- Globally active, stock listed company based in Norway
- leader in key technologies for zero-emission mobility
- largest producer of Type IV high-pressure vessels





Extension of value chain





2020

Corporate development











1990







2000





2010









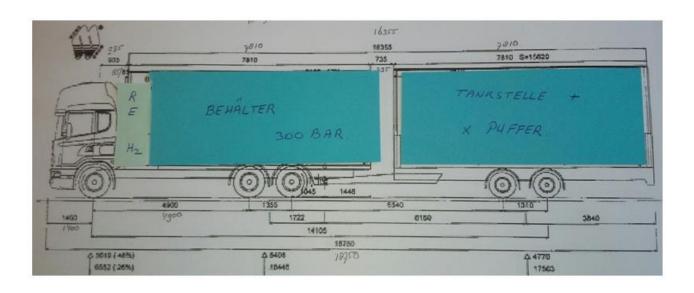






First ideas in 2016

- Wystrachs Wolfgang Wolter had the idea to develop a mobile refuelling station for HD, 350bar
- November 2016, intensitve discussions with Waterstoffnets Wouter van Laak about H2Share
- May 2017 H2Share Interreg project start in Lille, France





3rd plenary meeting at Wystrach in April 2018

• The design and build of the tankcontainer was finished





Trial test in November 2019

- The complete design and build of the mobile refuelling station was finished
- Test trial and software programm extension
- In parallel the permitting progress for Breytners demonstration in Schelluinen was pushed





First demonstration Breytner Schelluinen

• First set up of the mobile refueller at the facility of Vlot Logistics, March 2020





First demonstration Breytner Schelluinen

Corona-Impact

• Corona caused a hugh delay for the start of the demonstration



First demonstration Breytner Schelluinen

...but finally...







Additional event Geldhauser Munich, Germany, October 2020

Refuelling of Solaris and Caetano buses in the HyBayern project







Colruyt Brussels had to be canceled in March 2021

- · Colruyt and Wystrach prepared the permit
- Everything was taken care of and the hotel was booked for the Wystrach staff
- Again a Corona shut down and travelling restriction caused a cancellation, short before the start

Many thanks to **Stephanie van Damme** and **Robin Lataire** from Colruyt, for there support and co-operation!

We are sorry that we ended up, not being at Colruyt Brussel for the demonstration!



DHL demonstration in Breda, July 2021

• Driver training event







Gemeente Breda Afvalservice used the mobile refueller

- The garbage truck was refuelled at the mobile refueller, for a longer time period
- The driver training event was supported by Waterstofnets Stefan Neis







Refuelling test FAUN garbage truck and others...

- The garbage truck was refuelled at the mobile refueller, for a longer time period
- The driver training event was supported by Waterstofnets Stefan Neis
- Three different trucks were refuelled, directly after each other.







Colruyt demonstration Dole, France, October 2021

• The mobile refueller was used for a final demonstration in Dole, France for one month in Oct./ Nov. 2021









WyRefueler: Refueling systems

- Components and complete systems
- 350 bar and 700 bar
- stationary and mobile







Project: Deutsche Bahn





Wystrach would like to thank
Interreg, Waterstofnet and all
project and industry partners
for the good cooperation in the H2Share project!





Coffee break



11.20 - 11.35h: Coffee break

www.nweurope.eu/H2share

Demonstrations







11.50 - 12.20h:

BREYTNER Zero-emission Transport ABC-Logistik Colruyt Group DHL

Panel discussion with end-users about experiences, recommendations and next steps,...



12.20 - 12.35h: **Freek de Bruijn** *Rai Vereniging*

White spot & performance analysis of NWE and European roadmaps



European Regional Development Fund

Team ANL







Freek de Bruijn Program Consultant

Contents



- Market Potential Study
- White Spot & Performance Analysis of NWE & EU28 Roadmaps
- KPI analysis



Market Potential Study



Gemeente Helmond







4 Schrijvers
50 pagina's
30 Ref Documenten
Note: 2 x geup-date door projectverlenging

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White Spot & Performance Analysis of NWE & EU28 Roadmaps



Gemeente Helmond







3 Schrijvers 45 pagina's 100 Ref Documenten Note: 2 x geup-date door projectverlenging

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Interreg Luropean UNION North-West Europe H2-Share

European Regional Development Fund

Thank you



12.35 - 12.55h:

Matteo Azzimonti

Hydrogen Europe

European hydrogen strategy for heavy-duty

EU strategy on HDVs

H2Share Closing Conference 15.03.2022





Contact details



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 - m.azzimonti@hydrogeneurope.eu / v.borecky@hydrogeneurope.eu



Matteo Azzimonti

Junior Officer, Mobility Policy



Viktor Borecký

Manager, Mobility Policy



Relevant legislation



- Alternative Fuels Infrastructure Regulation
- Weights&Dimensions
- CO2 Standards for HDVs
- REDII / ETD / EU ETS



Transport Council 9/12



- Most of the Ministers agree that the right solution to decarbonise the HDV sector is using H2 technologies rather than electrification. Nonetheless, some countries, as Greece, Poland, Lithuania, and Romania insist on the use of LNG and CNG as transitional fuels.
- Many countries, among which Latvia, Estonia, Hungary, Bulgaria, Romania, Spain and Finland called for more flexibility regarding the refuelling and recharging stations targets, particularly geographic flexibility.
- Other countries (including Portugal, Greece, Poland, Romania) mentioned the need for a financial package to meet the new goals.
- Other topics of discussion:
 - Public and private infrastructure for recharging and refuelling for HDVs.
 - Specific incentives or measure to facilitate faster integration of alternatively powered HDVs.



TRAN draft report on AFIR



- Increased support of electricity and H2 targets, LNG excluded
- Minimum number of public HRS to be available by 31/12/27 (instead of 2030).
- Max distance between HRS reduced to 100km. (400km for LH2 HRS).
- At least one HRS for each urban node



Issues on H2 HDVs



- Growing narrative on the fact that BEV HDVs will play a major role in long haul transport
- Reluctance from policymakers to understand the benefits of having two infrastructures (e.g. MEP Bloss, ITRE Rapporteur for Opinion)
- Resistance from some Member States on the proposed HRS targets



The optimal choice is not black-and-white

Stereotypical user personas

Powertrain purchase criteria	Middle-aged in suburbs	Parents in city home	Environmentally conscious young adult		Couple in a city apartment	Driver with busy schedule	Taxis, LCV, autonomous	Buses and MDT/ HDT
Cost (CAPEX and OPEX)	(H)	(Hz)	4	(Hz)	(Hz)	(A)	(A) (Ha)	(7) The
Range	4=	4=	4	(F)= (H2)	(f)= (H2)	(H)	(F) (Ha)	(H ₂)
Charging access and convenience	4	4	(F) (H)	(4) (Ha)	(H ₂)	(H)	(H)	(F) (Hb)
Infrastructure requirements	4=	(f)= (H2)	(f)= (H2)	9=	(H2)	(F) (Ha)	9=	(Hz)
Durability (Reliability, Maintenance)	(F) (H)	(/)=	(2)=	(5)=	9=	(f) (Hb)	BEV FCEN	(Ha)

Source: Hydrogen Council: *Roadmap towards Zero Emissions: The Complementary Role of BEVs and FCEVs*



Next steps



- TRAN exchange on the draft report: 14 March
- ENVI adoption of opinion: 31 March
- ITRE adoption of opinion: 20 April (tbc)
- TRAN Exchange of views on amendments: 20 April (tbc)
- TRAN Adoption of report: 16 May
- Plenary vote: July 2022

Will be crucial to **protect higher targets** to ensure a dense HRS network in the future



Weights&Dimensions; current rules



Weight limits:

- Articulated vehicle: 40 ton

• two-axle motor vehicle: 18 ton, semi-trailer: 22 ton)

• three-axle motor vehicle: 25 ton, semi-trailer: 15 ton for the semi-trailer

- Motor vehicle:

driving axle: 11.5 ton

• tandem axle: between 11.5 and 18 ton, depending on the inter-axle distance

– Semi-trailer:

• tandem axle: between 11 and 20 ton, depending on the inter-axle distance

• tri-axle: between 21 and 24 ton, depending on the inter-axle distance

Length limits: 16,5m (articulated vehicle); 18,75m (road train, articulated bus)

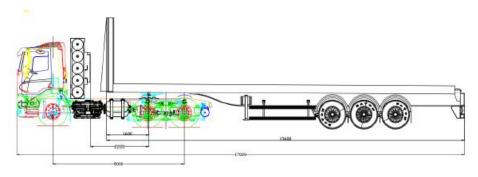
2019 review: 1 extra ton of weight for vehicles running on alternative fuel powertrains. Length derogation only for aerodynamic devices improving energy efficiency



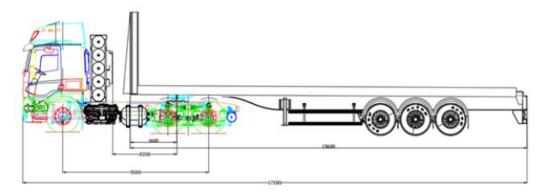
Example



Day-cab required length 17, 02



Night-cab required lenght 17,28





Next steps



Next steps:

Q1 2022: public consultation

Q4 2022: Commission adoption





CO2 Standards for HDVs



- Consultation stage.
- Most contentious issues:
 - Targets / phase out dates of ICEs
 - Design of incentive system
 - Introduction of carbon correction factor and/or fuel crediting system
- Commission adoption: Q4 2022





Other files 1/2



- Inclusion of road transport under the EU ETS: very divisive topic. Discussions focused on: need of a separate system, timeline, consequences on consumers.
- **REDII**: Rapporteur Pieper proposes to raise the target of renewable fuels and electricity in the transport sector to at least **20% by 2030** (instead of 13%) and to raise the share of RFNBOs to at least **2,6% in 2028 and 5% in 2030** (instead of 2,6% in 2030). Report adoption July 2022.
- ETD: Rapporteur opposes the determination of the environmental performance of energy products by the Parliament (not good), recognizes H2 as an energy carrier equal to electricity (good), and deletes EC taxation rates, stating that it is up to the Member States to decide. Report adoption date tbc.



Other files 2/2



 Urban Mobility Framework: action plan to further promote zero emission mobility within cities. On freight transport, need for refuelling infra in multimodal terminals. EC recommendations on SUMP to be published by end of 2022.



• Eurovignette: Final act signed, text to enter into force after 20 days since publication.



















































Objectives

- Develop long-haul heavy-duty (26-44t) fuel cell trucks that meet customers' requirements in a range of operating environments
- Homologate three fuel cell truck types
- Install hydrogen refuelling infrastructure at each site and provide high reliability hydrogen supplies that maximise environmental benefits
- Achieve >2 million kilometres of day-to-day driving, proving the viability of the technology
- Monitor the performance of the vehicles and infrastructure to provide evidence on the availability, efficiency, and environmental benefits
- Develop the business case to prepare the European market for further roll-out of fuel cell trucks











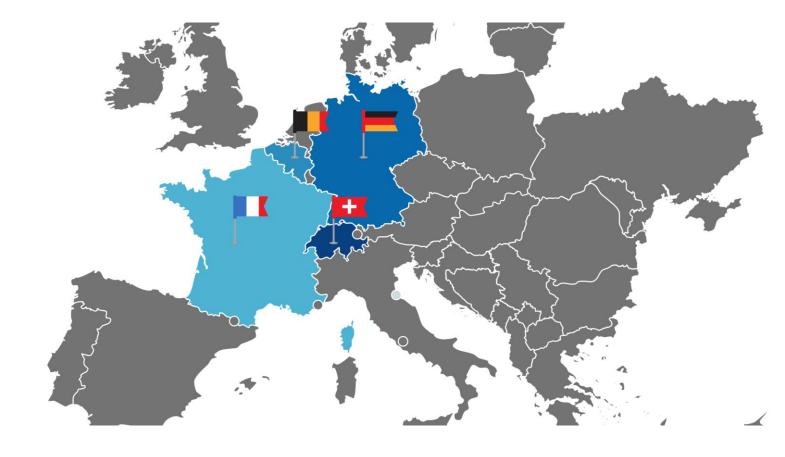
















Thank you for your support!



Propelling global carbon neutrality by accelerating the European hydrogen industry.





12.55 - 13.00h:

Rebecca Grossberg

Interreg NWE

Closing speech



H2-Share & H2Haul

Paving the road for a carbon-neutral Europe!





Thank you for your interest!

www.nweurope.eu/H2share

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European Regional Development Fund